Yuma Marine Corps Air Station

Boundaries:

The Yuma Marine Corps Air Station (YMCAS) occupies approximately 4,800 acres within the city and county of Yuma, Arizona. The City of Yuma, the nearest municipality, is located approximately one mile northwest of the station. The site boundaries are South Avenue 3E on the east, Interstate 8 on the north, East County 14th Street on the south, and the City of Yuma Main Canal on the west.

Site History:

- YMCAS began as a county airfield in 1928, and was leased to the U.S. Army Corps for pilot training and bomber crew training from 1941 to 1946.

- The U.S. Air Force reactivated the station as a Weapons Proficiency Center for fighter-interceptor units in 1951, and became an Air Force installation in 1954.

- YMCAS and associated range facilities were transferred to the U.S. Navy in 1959 to provide services and materials to support the operations of the Marine Aircraft Wing and its subordinate units.

- From 1969 until 1987, the air station served primarily as a training base for pilots assigned to Marine Corps Crew Readiness Training Group (MCCRTG)-10 flying the F-4 Phantom, A-4 Skyhawk and AV-8A Harrier.

- In 1987, Marine Aircraft Group-13, with Marine Attack Squadrons 211, 214, 311 and 513 replaced MCCRTG-10 as the major tenant command aboard the station. The move also brought Marine Wing Support Squadron-371 to Yuma, joining Marine Air Control Squadron-7 and 2nd Light Antiaircraft Missile Battalion

- Throughout the fall of 1990, virtually every Marine Corps fixed-wing squadron that participated in Operations Desert Shield and Desert Storm underwent pre-deployment training on Yuma's ranges.

- Today, YMCAS is the busiest air station in the Marine Corps and the third busiest in the Naval service. It is also one of the largest single contributors to the economy of Yuma County.

- Initial environmental assessment of YMCAS was completed in 1985, and was placed on the National Priorities List (NPL) in 1990.

- The Federal Facilities Agreement and Assessment Program established in 1991 included three Operable Units (OUs). OU-1 contained contaminated groundwater and vadose zone soil deeper than 10 feet below ground surface (bgs). OU-2 contained contaminated soil

from ground surface to 10 feet bgs. OU-3 did not identify any CERCLA sites, and was intended to be used for future sites if required.

- The remedial investigation/feasibility study (RI/FS) was completed in 1993. The RI identified 18 CERCLA Areas of Concern (CAOC); 12 sites required no further action and six sites (1, 4, 7, 8A, 9 and 10) were recommended for remedial action (RA).

- Removal of asbestos contaminated materials (ACM) and ACM-contained surface soil was completed in 1999 for sites 4, 7, and 9.

- The final Record of Decision (ROD) for Operable Unit 2 in 1997 assessed the impact on human health and the environment by hazardous substance releases to the soil.

- Institutional controls were selected as remedy for sites 1, 8A, and 10 in 1997.

- The final ROD for OU1 that was signed in April 2000 included areas of contaminated groundwater underlying the station, and the associated soil at depths greater than 10 feet below ground surface.

- The Source Treatment/Reduction Alternatives Plan (STRAP) was implemented in 1996.

- In 1999, the Air Sparging/Soil Vapor Extraction (AS/SVE) system became operational for Area 1 Hot Spot, and in 2000, the Vertical Circulation Treatment (VCT) system was operational for Area 1 Leading Edge Plume Area (LEPA).

- In 2002, the Five Year Review Report was completed.

Site Status:

- As a result of a new DoD policy, the Navy, in its Final Land Use Control Implementation Plan (LUCIP), was unable to fulfill the requirement for a deed restriction as required in the declaration of environmental use restriction (DEUR) for sites 1, 8A, and 10 in accordance with the ROD.

- ADEQ and the Navy have agreed to use an institutional control plan (ICP) as the recommended platform for developing and implementing the alternative land use control (LUC) mechanisms. All open and active installations must submit for regulatory review and approval of a LUCIP that documents the procedures to be followed in monitoring and managing engineering and/or institutional controls at the facility in accordance with the ROD.

- Area 1 Hot Spot (Source) Plume Area is located at the aircraft flight apron in the vicinity of Building 230, and is being treated by AS/SVE to remove contaminants from the groundwater. This system has been determined to be effective and will continue as well as long term monitoring (LTM).

- Area 1 Leading Edge Plume Area (LEPA) is located at the Northwest Station boundary and is being treated by vertical recirculation to provide containment and treatment of relatively low concentrations. This system has been determined to be effective and will continue as well as LTM.

- LTM and monitored natural attenuation (MNA) of groundwater are being conducted to address very low levels of contaminants at Areas 2, 3, and 6.

Site Hydrogeology:

- YMCAS is located in the Basin and Range lowlands province that covers most of southern Arizona. This physiographic province is characterized by elongated northwest-southeast trending fault-block mountain ranges separated by broad, deep alluvial valleys.

- Hydrogeologic units defined for the YMCAS site are: the upper fine-grained unit, the coarse gravel unit, and the wedge unit. The total thickness of the upper fine-grained unit is approximately 180 to 200 feet thick at the site. This hydrogeologic unit correlates with the eolian deposits and the unconsolidated, inter-bedded sands, silts and sandy clays of the ancient Colorado and Gila Rivers. Many shallow wells on the Yuma Mesa are screened in this unit; water quality is variable due to the large volume of irrigation recharge (Jacobs, 1998). Ground water in the upper fine-grained unit is generally characterized as slightly saline, with total dissolved solids (TDS) of 1,000 to 3,000 mg/l.

- The primary regional aquifer is the coarse gravel unit that underlies the upper fine-grained unit. This unit varies in thickness from zero to 100 ft throughout the Yuma area, maximum thickness occurs near the center of the valley and thins toward the mountain fronts. The fluvial and deltaic gravel sequence is composed of fine to coarse gravel with cobbles. At the YMCAS site, this unit is believed to be between 20 and 50 ft thick and is the most permeable unit in the sequence. Depth to this layer from the mesa surface is approximately 180 ft. Ground water in the coarse gravel unit is generally characterized as slightly saline, with TDS of 1,000 to 3,000 mg/l.

- Depth to groundwater across the site ranges from 40 to 64 feet below land surface, at approximate elevations ranging between 140 and 172 ft above mean sea level. The direction of regional ground water flow for the greater Yuma area is from the northwest to the southeast, except for the Yuma Mesa area. Since 1925, intensive agricultural irrigation has caused groundwater to mound beneath the mesa and flow radially from the center of the mound. The direction of flow beneath the YMCAS site is from southeast to northwest. Water levels have remained relatively stable since the site investigation began in the 1980s.

- The deepest, thickest and oldest unit of the Yuma aquifer system is known as the wedge unit and is composed of ancestral Colorado River fluvial and deltaic alluvial deposits, a marine sedimentary sequence (Bouse Formation), and siltstone and sandstone deposits

(Steams et al., 1985). Water in this unit is generally of better quality than in the overlying units. This unit is up to 2,000 ft thick and underlain by crystalline bedrock.

Contaminants:

The contaminants of concern in groundwater include trichloroethene (TCE), dichloroethene (DCE), tetrachloroethene (PCE) and petroleum hydrocarbons. During the 70 years of operation, YMCAS generated industrial wastes such as used oil, solvents, paint residues, battery acid, pesticides, herbicides, polychlorinated biphenyls (PCBs), asbestos in the form of non-friable asbestos containing material (ACM) and petroleum hydrocarbons from a jet fuel leak. The ACM was scattered on top of and buried in the surface soil, and remediated in 1999. Contaminants of concern at the site may change as new data become available.

Public Health Impact:

There are no known public health risks at the site.

Community Involvement Activities:

A restoration advisory board may be established for this site in the future.

Information Repository:

Marine Corps Air Station Yuma has established two information repositories, one at the Yuma County Library located at 350 South Third Avenue in Yuma and one on-base at Yuma Marine Corps Air Station. The official administrative record is compiled and maintained by the Navy at the Southwest Division Naval Facilities Engineering Command in San Diego. Site information is also available at the ADEQ main office located at 1110 West Washington Street, Phoenix. Site information at ADEQ is available for review Monday through Friday from 8 a.m. to 5 p.m. To arrange for a time to review the public site file, please call the ADEQ Records Center (602) 771-4378 or (800) 234-5677 (Arizona toll free).

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*In Arizona, but outside the Phoenix area, call toll-free at (800) 234-5677.
**Call EPA's toll-free message line at (800) 231-3075.